AGENDA
CALIFORNIA TRAFFIC CONTROL DEVICES COMMITTEE (CTCDC)
June 14, 2006 Meeting
3333 Fairview Road, Costa Mesa, CA 92626
TIME 9:00 AM

Organization Items

1. **Introduction**
2. **Approval of Minutes (February 16, 2006 Meeting)**
3. **Public Comments**

   At this time, members of the public may comment on any item not appearing on the agenda. Matters presented under this item cannot be discussed or acted upon by the Committee at this time. For items appearing on the agenda, the public is invited to make comments at the time the item is considered by the Committee. Any person addressing the Committee will be limited to a maximum of five (5) minutes so that all interested parties have an opportunity to speak. When addressing Committee, please state your name, address, and business or organization you are representing for the record.

Agenda Items

4. **Public Hearing**

   Prior to adopting rules and regulations prescribing uniform standards and specifications for all official traffic control devices placed pursuant to Section 21400 of the California Vehicle Code (CVC), the Department of Transportation is required to consult with local agencies and hold public hearings.

04-E	California MUTCD Adoption (FHWA's MUTCD 2003 Revision 1, as amended for use in California) formerly known as "Combining of the MUTCD 2003 & CA Supplement to a single document	(Continued) (Fisher)
06-4	Older California Traffic Safety Task Force, Proposal for Inclusion into the California MUTCD	(Continued) (Meis)

5. **Request for Experimentation**

03-6	Radar Speed (Speed Feedback) Display Sign (Final Report by the City of San Jose)	(Continued) (Borstel)
06-5	Clear The Way Signage (Drive Damaged Vehicle to Shoulder**)** (Experiment Request by CHP)	(Introduction) (Whiteford)

6. **Discussion Items**

06-6	Wildlife Corridor Signs	(Introduction) (Babico)
06-7	MUTCD 2003 Revision No. 1 (Pharmacy Signing)	(Introduction) (Meis)
06-8	FHWA's Interim Approvals for Optional Use of Traffic Control Devices	(Introduction) (Mansourian)

7. Information Items

03-13	Variable Speed Limit Sign	(Continued)
	(The City of Campbell decided not to pursue the experimentation)	(Borstel)

8. Next Meeting

9. Adjourn

ITEM UNDER EXPERIMENTATION

99-12	Speed Striping For Smart Crosswalks (Experiment Agency-Caltrans D7) Status: Caltrans D7 will submit a report on the experiment	(Meis)
99-13	Illuminated Pavement Markers On Median Barriers (Experiment Agency-Caltrans D7) Status: Caltrans D7 will submit report on the experiment	(Meis)
01-4	Tactile Pedestrian Indicator With Audible Information (Experiment request by the City of Santa Cruz)	(Tanda)
01-9	IN-ROADWAY WARNING LIGHTS AT R/R CROSSINGS (Experiment requests by CPUC in cooperation Kern Co. & City of Fresno)	(Meis)
02-15	Radar Guided Dynamic Curve Warning System (Experimentation Agency – Caltrans D5) Status – Caltrans D5 will submit a report on the experiment	(Meis)
03-1	Speed Feedback (Radar Speed) Sign (Experimentation Agency – City of Whittier)	(Fisher)
03-4	Radar Speed Sign (Experiment Agency – City of Vacaville)	(Borstel)
03-5	Radar Speed Sign (Experiment Agency – City of San Mateo)	(Borstel)
03-14	Numbering of Signalized Intersections (Experiment Request by the CVAG)	(Babico)
03-15	Radar Speed Sign (Experiment Request by the City of Freemont Status – City of Freemont finalizing a report on the experiment	(Borstel)
04-9	Request to Experiment with “Watch The Road” Sign (Experiment Agency – Los Angles DOT)	(Bahadori)
04-10	Slow for the Cone Zone Sign (Experiment Agency – Caltrans)	(Meis)
04-12	Requests for experimentation with “Flashing Yellow Arrows” (Experiment Agency – City of Fullerton and Pasadena)	(Bahadori)

STATUS OF CALTRANS ACTION ON PAST ITEMS

Item 01-1 U-TURN SIGNAL HEADS INDICATOR
Caltrans will develop appropriate standards to ensure visibility and make the U-turn signal head indicator an official traffic control device by inclusion in the Caltrans Supplement.

Item 00-4 USE OF RAISED PAVEMENT MARKERS IN TRANSVERSE PATTERN
Caltrans will take appropriate action on the recommendation made by the Committee.

Item 02-3 RIGHT EDGELINE
Caltrans will take appropriate action on the recommendation made by the Committee.

04-E California MUTCD Adoption (FHWA's MUTCD 2003 Revision 1, as amended for use in California) formerly known as "Combining of the MUTCD 2003 & CA Supplement to a single document

California
Manual on Uniform Traffic Control Devices
for Streets and Highways
(FHWA's MUTCD 2003 Edition Revision 1, as amended for use in California)

Caltrans requests the CTCDC to recommend the adoption of the California MUTCD (FHWA's MUTCD 2003 Revision 1, as amended for use in California) as the standard for all official traffic control devices, in accordance with Sections 21350 and 21400 of the California Vehicle Code. This will replace the two current documents, FHWA's MUTCD 2003 and the California Supplement.

Summary

The California MUTCD document, which combines FHWA's MUTCD 2003 Edition Revision 1 with the California Supplement, has been prepared by Caltrans in response to a formal recommendation by the CTCDC to Caltrans at their May 6, 2004 meeting held in San Rafael. The overall format, document name, cover design and some outstanding issues from the previous MUTCD adoption were discussed and agreed upon by the CTCDC and Caltrans at subsequent meetings on December 8, 2004 in Oakland and on June 9, 2005 in Sacramento.

Comments received through November 14, 2005 on draft California MUTCD Parts 1 and 5 through 10 were discussed in a CTCDC workshop on November 16, 2005 in Los Angeles.
The draft of the California MUTCD document is open to the public for review and comment and is posted on the California Supplement web site. A "Change List" was provided for ease in comparing the relevant documents. It also contained details about the new format. The public comment period closes on May 30, 2006. Comments provided during the public comment period will be discussed with the topic specific experts in a CTCDC workshop on June 1, 2006.
Resolutions and decisions reached upon, in these and other regular CTCDC meetings and Caltrans issued TOPDs, since May 20, 2004 are reflected in the California MUTCD.

For more information, see the California Supplement web site at:
http://www.dot.ca.gov/hq/traffops/signtech/mutcdsupp/

06-4 Older California Traffic Safety Task Force Proposal for inclusion into the California Supplement

Final recommendations approved per CTCDC Workshop of February 22, 2006 and proposed for inclusion into the California MUTCD

The proposed language for the individual sections is listed on the following pages:

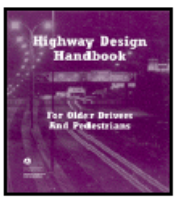
CTCDC Workshop Agenda Items of Older Driver & Pedestrian Recommendations Incorporation into the California MUTCD

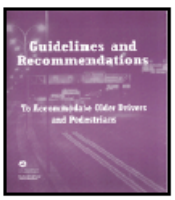
Wednesday - February 22, 2006

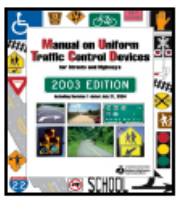
West Sacramento, CA 95605

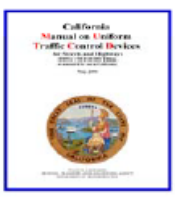
Final Recommendation per Workshop Discussion

S. No.	Recomm. #	Related TCD		CTCDC Wshop 2/22/06
1	I.C.(1)	Marking	Yes	Support
2	I.C.(2)	Marking	No	
3	I.C.(6)	Marking	Yes	Support
4	I.E.(4a)	Sign	Yes	Guidance
5	I.F.(1)	Marking	No	
6	I.H.(2)	Signal	No	
7	I.H.(4)	Sign	Yes	Option
8	I.H.(5)	Signal	No	
9	I.H.(6)	Signal	No	
10	I.H.(7)	Signal	No	
11	I.I.(1)	Signal	No	Strikeout of option in Standard
12	I.J.(3)	Sign	Yes	Option
13	I.K.(3)	Sign	No	
14	I.L.(2)	Sign	No	
15	I.L.(5)	Marking	Yes	Option
16	I.N.(1)	Signal	No	
17	I.N.(2)	Signal	No	
18	I.N.(3)	Signal	Yes	Guidance
19	I.P.(2)	Marking	No	
20	I.P.(6)	Signal	Yes	Option
21	I.Q.(2)	Marking	Yes	Option is already included
22	I.Q.(4)	Marking	No	
23	II.A.(3)	Sign	Yes	Guidance
24	II.A.(4a)	Marking	Yes	Option
25	II.A.(4b)	Marking	Yes	Guidance
26	II.D.(1)	Signal	Yes	Guidance
27	II.D.(4a)	Sign	Yes	Guidance
28	III.A.(1)	Marking	No	
29	III.A.(2)	Marking	Yes	Support
30	III.A.(3)	Marking	Yes	Guidance
31	III.D.(1)	Marking	No	
32	III.D.(2)	Sign	Yes	Guidance
33	IV.C.(1a)	TTC (Work Zone)	Yes	Guidance
34	IV.C.(1b)	TTC (Work Zone)	Yes	Guidance
35	IV.C.(1c)	TTC (Work Zone)	Yes	Guidance
36	IV.C.(1e)	TTC (Work Zone)	Yes	Guidance
37	IV.C.(2)	TTC (Work Zone)	Yes	Guidance
38	IV.C.(3)	TTC (Work Zone)	Yes	Guidance
39	IV.D.(4)	TTC (Work Zone)	Yes	Guidance
40	V.A.(1b)	Sign	Yes	Guidance
41	V.A.(3)	Marking	Yes	Guidance
			Yes	**26**
			No	**15**









1 - (I.C.(1))
Section 3G.01 General (Chapter 3G – Islands)
Support:
Raised channelization with sloping (mountable) curbed medians are used instead of channelization accomplished through the use of pavement markings (flush), for the following operating conditions:
(a) Left- and right-turn lane treatments at intersections on all roadways with operating speeds of less than 65 km/h (40 mph).
(b) Right-turn treatments on roadways with operating speeds equal to or greater than 65 km/h (40 mph).

3 - (I.C.(6))
Section 3B.03 Other Yellow Longitudinal Pavement Markings
Support:
Channelized left-turn lanes in combination with continuous raised-curb medians are used instead of two-way left-turn lanes (TWLTL) if one or more of the following conditions exist:
- ***Average daily traffic volumes exceed 20,000 vehicles per day***
- ***For remediation where there is a demonstrated crash problem,***
- ***Wherever a need is demonstrated through engineering study.***

4 - (I.E.(4a))
Section 2B.33 Keep Right and Keep Left Signs (R4-7, R4-8)
Guidance:
At intersections where the left-turn lane treatment results in channelized offset left-turn lanes (e.g., a parallel or tapered left-turn lane between two medians), the size of the Keep Right (R4-7) sign, if used, should be of the next higher roadway classification, if feasible, as shown in Table 2B-1, to reduce the potential for wrong-way maneuvers by drivers turning left from a stop-controlled, intersecting minor roadway.
Hence, per this offset left-turn lanes scenario, if the type of roadway is a conventional road, the R4-7 sign size used, if feasible, should be from the expressway column as 900 x 1200 mm (36 x 48 in), not the 600 x 750 mm (24 x 30 in) size in the conventional road column.
Section 2B.34 DO NOT ENTER Sign (R5-1)
Guidance:
At intersections where the left-turn lane treatment results in channelized offset left-turn lanes (e.g., a parallel or tapered left-turn lane between two medians), the size of the DO NOT ENTER (R5-1) sign, if used, should be of the next higher roadway classification, if feasible, as shown in Table 2B-1, to reduce the potential for wrong-way maneuvers by drivers turning left from a stop-controlled, intersecting minor roadway.
Hence, per this offset left-turn lanes scenario, if the type of roadway is a conventional road, the R5-1 sign size used, if feasible, should be from the expressway column as 900 x 900 mm (36 x 36 in), not the 750 x 750 mm (30 x 30 in) size in the conventional road column.
Section 2B.35 WRONG WAY Sign (R5-1a)
Guidance:
At intersections where the left-turn lane treatment results in channelized offset left-turn lanes (e.g., a parallel or tapered left-turn lane between two medians), the size of the WRONG WAY (R5-1a) sign, if used, should be of the next higher roadway classification, if feasible, as shown in Table 2B-1, to reduce the potential for wrong-way maneuvers by drivers turning left from a stop-controlled, intersecting minor roadway.
Hence, per this offset left-turn lanes scenario, if the type of roadway is a conventional road, the R5-1 sign size used, if feasible, should be from the expressway column not the conventional road column. Support:

Coincidentally, in this particular example, the R5-1 sign size is 900 x 600 mm (36 x 24 in) for both columns.

Section 2B.37 ONE WAY Signs (R6-1, R6-2)

Guidance:

At intersections where the left-turn lane treatment results in channelized offset left-turn lanes (e.g., a parallel or tapered left-turn lane between two medians), the size of the ONE WAY (R6-1, R6-2) signs, if used, should be of the next higher roadway classification, if feasible, as shown in Table 2B-1, to reduce the potential for wrong-way maneuvers by drivers turning left from a stop-controlled, intersecting minor roadway.

Hence, per this offset left-turn lanes scenario, if the type of roadway is a conventional road, the R6-1 sign size used, if feasible, should be from the expressway column as 1350 x 450 mm (54 x 18 in), not the 900 x 300 mm (36 x 12 in) size in the conventional road column.

Section 2B.38 Divided Highway Crossing Signs (R6-3, R6-3a)

Guidance:

At intersections where the left-turn lane treatment results in channelized offset left-turn lanes (e.g., a parallel or tapered left-turn lane between two medians), the size of the Divided Highway Crossing (R6-3, R6-3a) signs, if used, should be of the next higher roadway classification, if feasible, as shown in Table 2B-1, to reduce the potential for wrong-way maneuvers by drivers turning left from a stop-controlled, intersecting minor roadway.

Hence, per this offset left-turn lanes scenario, if the type of roadway is a conventional road, the R6-3 sign size used, if feasible, should be from the expressway column as 900 x 750 mm (36 x 30 in), not the 750 x 600 mm (30 x 24 in) size in the conventional road column.

7 - (I.H.(4))

Section 2B.45 Traffic Signal Signs (R10-1 through R10-21)

Option:

Where practical, an additional LEFT TURN YIELD ON GREEN (symbolic green ball) (R10-12) sign ((i.e., in addition to the R10-12 sign adjacent to the signal face) along with an AT SIGNAL (R73-9(CA)) supplemental plaque should be used on the approach to the signalized intersection. The location of this R10-12 sign should be in the raised median at the beginning of the left-turn lane, and be based upon Table 2C-4, or be based upon engineering judgement.

12 - (I.J.(3))

Section 2D.38 Street Name Sign (D3-1)

Option:

To minimize sign panel size, while accommodating larger letter heights, borders may be eliminated on Street Name signs.

15 - (I.L.(5))

Section 3B.106(CA) Rumble Strips

Guidance:

Rumble strips may be used upstream of stop-controlled or signalized intersections if one or more of the following conditions exist:

- Engineering judgement indicates a special need due to sight distance restriction.
- High approach speeds.
- History of Ran-Stop-Sign crashes.

18 - (I.N.(3))

Section 4D.17 Visibility, Shielding, and Positioning of Signal Faces

Guidance:

A signal backplate should be used on signal faces for all roadways.

20 - (I.P.(6))

Section 4E.10 Pedestrian Intervals and Signal Phases

Option:

At intersections with high pedestrian volumes, high turning-vehicle volumes, and no turn on red (NTOR) control for traffic moving parallel to a marked crosswalk, a leading pedestrian interval (LPI), timed to allow slower walkers to cross at least one moving lane of traffic may be used to reduce conflicts between pedestrians and turning vehicles.

21 - (I.Q.(2))

None. Recommendation is already covered by the MUTCD 2003 Section 3B.24. It was tagged in error as not incorporated.

23 - (II.A.(3))

Section 2E.19 Diagrammatic Signs

Guidance:

Diagrammatic signs should be designed in accordance with the following additional criteria:

~~E. Arrow shafts should contain lane lines where appropriate.~~

E. Arrow shafts should match the number of lanes.

24 - (II.A.(4a))

Figure 3D-102(CA) sketch will be revised and added as sheet 2 of 2 per application of this recommendation.

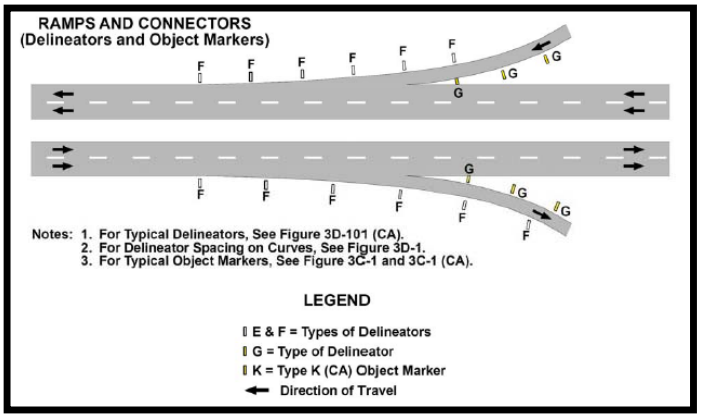
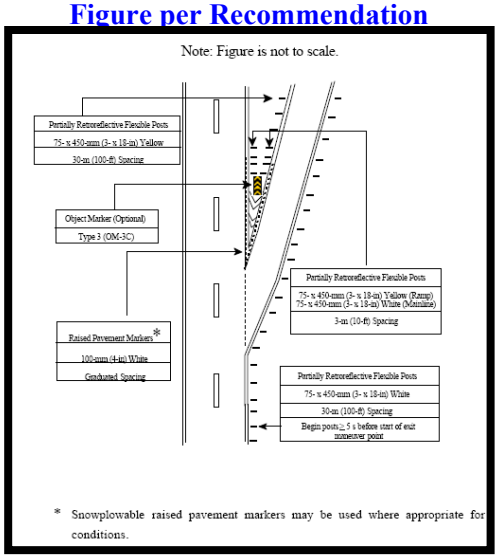


Figure 3D-102(CA)

Figure per Recommendation



Section 3D.04 Delineator Placement and Spacing

Option:

If the exit gore at an interchange is not illuminated or is partially illuminated, delineators may be placed as shown in Figure 3D-102(CA) per the following details:

a) Type F - White Retroreflectors (1 Sided) on the right side, beginning at a distance > 5S from the theoretical gore point at 30 m (100 ft) spacing.
b) Type G - Yellow Retroreflectors (1 Sided) on the left side of the exit at 3 m (10 ft) spacing and then shifting to 30 m (100 ft) spacing.
c) Type F - White Retroreflectors (1 Sided) on the right side of the mainline, downstream of the exit at 3 m (10 ft) spacing.

Support:

Refer to Table 3D-1 for formula to calculate value of S.

25 - (II.A.(4b))

Section 3C.03 Markings for Objects Adjacent to the Roadway

Guidance:

If the exit gore at an interchange is identified as a hazardous gore area based upon engineering judgement, then in addition to the Type F and G delineators, Type R(CA) (OM-3C) object marker should be used as shown in Figure 3D-102(CA).

26 - (II.D.(1))

Section 4J.03 Design of Lane-Use Control Signals

Guidance:

The RED X lane-use control signal face the downward pointing green arrow symbol should consist of a stroke width of 38 mm (1.5 in.).

27 - (II.D.4(a))

Section 2B.34 DO NOT ENTER Sign (R5-1)

Guidance:

On multilane roadways, a minimum size of 900 mm x 900 mm (36 in x 36 in) should be used for the DO NOT ENTER (R5-1) sign.

29 - (III.A.(2))

Section 3B.01 Yellow Centerline Pavement Markings and Warrants

Support:

For horizontal curves with radii less than 1000 m (3280 ft), use Detail 22 instead of Detail 21 for centerline markings as it includes retroreflective raised pavement markers. Detail 22 should be applied on the approach to the curve per Table 2C-4 and continued throughout the length of the curve.

30 - (III.A.(3))

Maximum

Table 3D-1. Spacing for Delineators on Horizontal Curves

Radius (R) of Curve (meters)	Approximate Spacing (S) on Curve (meters)	Radius (R) of Curve (feet)	Approximate Spacing (S) on Curve (feet)
15	6	50	20
35	8	115	25
55	11	180	35
75	13	250	40
95	15	300	50
125	18	400	55
155	20	500	65
185	22	600	70
215	24	700	75
245	26	800	80
275	27	900	85
305	29	1,000	90

12 m

40 ft

Distances in feet were rounded to the nearest 5 feet.

Spacing for specific radii may be interpolated from table. The minimum spacing should be 6.1 m (20 ft). The spacing on curves should not exceed 90 m (300 ft). In advance of or beyond a curve, and proceeding away from the end of the curve, the spacing of the first delineator is 2S, the second 3S, and the third 6S but not to exceed 90 m (300 ft). S refers to the delineator spacing for specific radii computed from the formula $S=1.7\sqrt{R-TS}$ for metric units and $S=3\sqrt{R-50}$ for English units.

32 - (III.D.(2))

Section 2B.29 DO NOT PASS Sign (R4-1)

~~Option:~~

~~***If signing is needed on the left side of the roadway for additional emphasis, NO PASSING ZONE (W14-3) signs may be used (see Section 2C.35).***~~

Support:

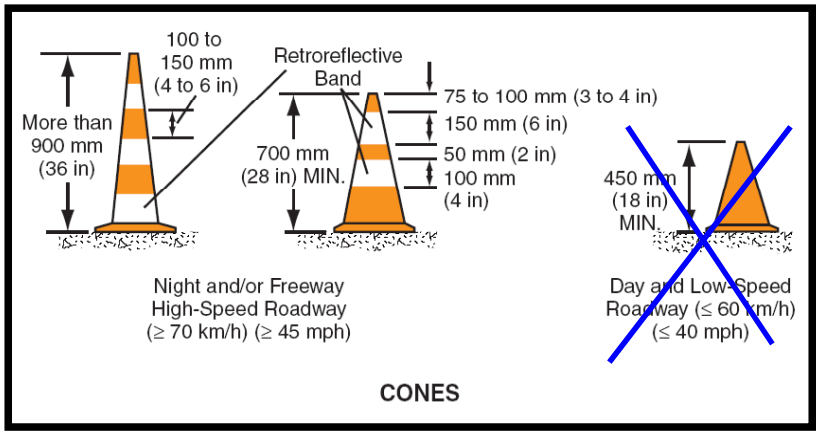
See Section 2C.35 for use of NO PASSING ZONE (W14-3) signs.

Section 2C.35 NO PASSING ZONE Sign (W14-3)

Guidance:

The NO PASSING ZONE (W14-3) sign should be used at the beginning of no-passing zones identified by either pavement markings or DO NOT PASS signs or both (see Sections 2B.29 and 3B.02).

33 - (IV.C.(1a))



Section 6F.59 Cones

Standard:

Cones (see Figure 6F-7, Sheet 1 of 2) shall be predominantly orange and shall be made of a material that can be struck without causing damage to the impacting vehicle. For daytime and low-speed roadways, cones shall be not less than ~~450 mm (18 in)~~ 700 mm (28 in) in height. When cones are used on freeways and other high-speed highways or at night on all highways, or when more conspicuous guidance is needed, cones shall be a minimum of 700 mm (28 in) in height.

Guidance:

Cones should be a minimum of 900 mm (36 in) in height.

Retroreflectorization of cones that are more than 900 mm (36 in) in height should be provided with a retroreflective material totaling at least 300 mm (12 in) wide at night.

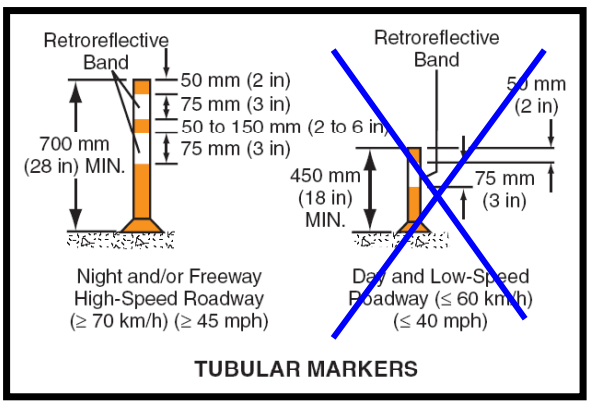
Support:

Cones that are 1050 mm (42 in) high provide additional conspicuity in visually complex environments.

CA MUTCD Part - Introduction

The target compliance date for this change shall be January 1, 2014.

34 - (IV.C.(1b))



Section 6F.60 Tubular Markers

Standard:

Tubular markers (see Figure 6F-7, Sheet 1 of 2) shall be predominantly orange and shall be not less than ~~450 mm (18 in)~~ 700 mm (28 in) high and 50 mm (2 in) wide facing road users. They shall be made of a material that can be struck without causing damage to the impacting vehicle.

Guidance:

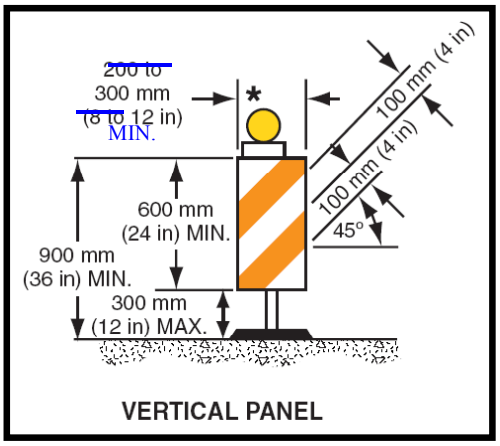
Tubular markers should be a minimum of 1050 mm (42 in) in height.

Retroreflectorization of tubular markers that are more than 1050 mm (42 in) in height should be provided with a single 300 mm (12 in) wide white band at night.

CA MUTCD Part - Introduction

The target compliance date for this change shall be January 1, 2014.

35 - (IV.C.(1c))



Section 6F.61 Vertical Panels

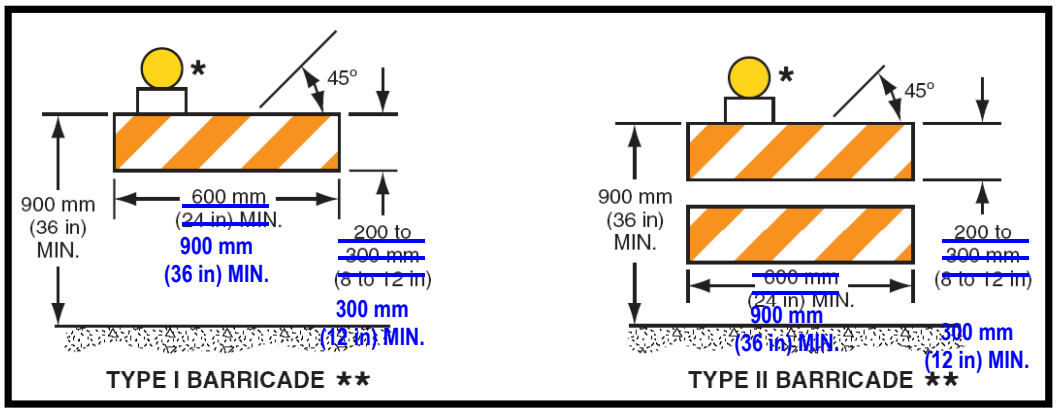
Guidance:

Vertical panels should be a minimum of 300 mm (12 in) in width.

CA MUTCD Part - Introduction

The target compliance date for this change shall be January 1, 2014.

36 - (IV.C.(1e))



Section 6F.63 Type I, II, or III Barricades

Guidance:

The minimum length for Type I and Type II Barricades should be 900 mm (36 in). Each barricade rail should be a minimum of 300 mm (12 in) wide.

CA MUTCD Part - Introduction

The target compliance date for this change shall be January 1, 2014.

37 - (IV.C.(2))

Section 6F.58 Channelizing Devices

Guidance:

~~The spacing of channelizing devices should not exceed a distance in meters (feet) equal to 0.2 times the speed limit in km/h (1.0 times the speed limit in mph) when used for taper channelization, and a distance in meters (feet) equal to 0.4 times the speed limit in km/h (2.0 times the speed limit in mph) when used for tangent channelization.~~

The spacing of channelizing devices should not exceed a distance in meters (feet) equal to 0.2 times the speed limit in km/h (1.0 times the speed limit in mph).

Where engineering judgment indicates a special need for speed reduction due to horizontal curvature or through the taper for a lane closure, the spacing of channelizing devices should not exceed a distance in meters (feet) equal to 0.1 times the speed limit in km/h (0.5 times the speed limit in mph).

Table 6F-102(CA). Maximum Spacing of Channelizing Devices

Speed (mph)	Maximum Channelizer Spacing		
	Taper* (ft)	Tangent (ft)	Conflict** (ft)
20	~~20~~ 10	~~40~~ 20	~~10~~ 5
25	~~25~~ 12	~~50~~ 25	~~12~~ 6
30	~~30~~ 15	~~60~~ 30	~~15~~ 7
35	~~35~~ 17	~~70~~ 35	~~17~~ 8
40	~~40~~ 20	~~80~~ 40	~~20~~ 10
45	~~45~~ 22	~~90~~ 45	~~22~~ 11
50	~~50~~ 25	~~100~~ 50	~~25~~ 12
55	~~55~~ 27	~~110~~ 55	~~27~~ 13
60	~~60~~ 30	~~120~~ 60	~~30~~ 15
65	~~65~~ 32	~~130~~ 65	~~32~~ 16
70	~~70~~ 35	~~140~~ 70	~~35~~ 17

38 - (IV.C.(3))

Section 6F.65 Temporary Traffic Barriers as Channelizing Devices

Section 6F.81 Temporary Traffic Barriers

Guidance:

Side reflectors with cube-corner lenses or reflectors (facing the driver) should be mounted on top of temporary traffic barriers. If used, the spacing of side reflectors should not exceed a distance in meters (feet) equal to 0.2 times the speed limit in km/h (1.0 times the speed limit in mph) through the TTC zone.

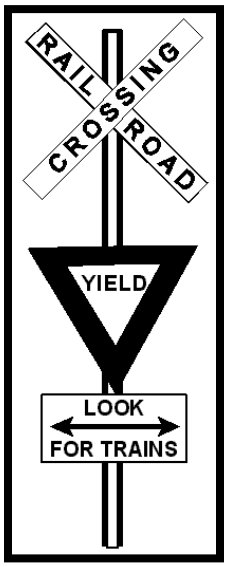
39 - (IV.D.(4))

Section 6F.85 Screens

Guidance:

Temporary traffic screen should be mounted on top of temporary traffic barriers, when barriers are used in transition and crossover areas for glare-control on high-volume roadways. If used, temporary traffic screen panels should be contiguous without gaps, minimum 813 mm (32 in) in height, and orange or red-orange in color.

40 - (V.A.(1b))



Section 8B.08 STOP (R1-1) or YIELD (R1-2) Signs at Highway-Rail Grade Crossings

Guidance:

If used, the YIELD (R1-2) sign should be part of a sign assembly consisting of the Crossbuck (R15-1) sign and the LOOK (R15-8) sign, as shown in the figure above.

41 - (V.A.(3))

Section 8C.01 Illumination at Highway-Rail Grade Crossings

Guidance:

Delineators should be placed on the right side of all approaches to non-illuminated rural grade crossings.

If used, delineators should be placed from the location of the Highway-Rail Grade Crossing Advance Warning (W10-1) sign to the Crossbuck (R15-1) sign and extend an equal distance downstream. The delineator spacing should not be more than 15 m (50 ft).

Support:

Other devices can be added to supplement the existing devices and device spacing may be adjusted to provide additional reaction time or delineation.

03-6 Radar Speed (Speed Feedback) Display Sign

The City of San Jose will present the results of the study on the effectiveness of the school radar signs.

CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

Department of Transportation

February 16, 2006

Farhad Mansourian
Chairman CTCDC
Director of Public Works
Marin County
P.O. Box 4186
San Rafael, CA 94913

SUBJECT: CITY OF SAN JOSE RADAR SPEED (SPEED FEEDBACK) DISPLAY SIGN STUDY (03-6)

Mr. Farhad Mansourian,

San Jose is continuing to study the effectiveness of the 33 school radar speed display signs that were installed in the Fall 2003. At the June 2003 CTCDC meeting, San Jose requested an experimental designation waiver for Radar Speed Display Signs that were to be installed as a result of grant funding under the Safe Routes to School (SR2S) Grant program. The waiver was requested as San Jose had already conducted a study of the effectiveness of the radar speed display signs in 2001. After much discussion at the CTCDC meeting, it was agreed that San Jose would conduct a study to compare the effectiveness of different display messages on the signs.

The scope of the initial phase of the study in San Jose involved testing the following different modes of operation:

Mode 1	"SPEED LIMIT 25 MPH"
Mode 2	"YOUR SPEED XX" when a vehicle exceeds 25MPH
Mode 3	"SPEED LIMIT 25MPH" switching to "YOUR SPEED XX" when a vehicle exceeds 25 MPH

During the initial study phase, the mode of operation remained consistent at any particular school. As part of this study phase, San Jose collected data before and after installation of the signs, and conducted motorist surveys for each mode of operation.

To reinforce some of the findings in the initial study phase, San Jose will be conducting a secondary study this spring at two (2) schools. The radar signs at both of these schools will be tested for each of the above modes of operation. In addition, the following 4th mode will be tested:

Mode 4 "SPEED LIMIT 25 MPH" switching to "SLOW DOWN" when a vehicle exceeds 30 MPH

Except for the initial mode of operation (current mode), each sign will cycle thru a minimum 30-day period in each mode. Traffic data will be collected before and after changing the display message for each mode of operation.

San Jose will be prepared to present the results of the study on the effectiveness of the school radar signs at the Fall CTCDC meeting.

Please let me know if you need additional information before this meeting.

Sincerely,

Laura Wells

LAURA WELLS, P.E.
Division Manager
Department of Transportation

C: Devinder Singh
Ed von Borstel

06-5 Clear the Way Signage (Drive Damaged vehicle to Shoulder)

Prepared by:

JOE WHITEFORD, Captain
Special Projects Section, California Highway Patrol
(916) 657-7222
jwhiteford@chp.ca.gov

Summary:

Highway safety continues to be a primary concern for CHP and Caltrans personnel. Motorists who stop in a highway's traffic lane to deal with a property-damage-only (PDO) collision put themselves, and others, in harms way.

PDO collisions increase the risk of drivers, who are involved in the collision, of being struck by an errant vehicle; increase the occurrence of secondary collisions; and constrict the movement of traffic and commerce. Although there is no data that measures the impact of these occurrences, it is reasonable to expect that "Clear The Way" signs along with a public awareness campaign would help increase motorist safety after a PDO accident occurs.

Proposal:

This proposal seeks to improve safety by reducing these occurrences through joint CHP-Caltrans development and installation of "Clear The Way" signs. A pilot program and evaluation would be used to test the effectiveness and ideal placement of the signs. If successful, CHP and Caltrans will develop a statewide implementation plan.

Discussion:

At least three other states use "Clear The Way" type signs, including: Florida, Tennessee, and Washington State. Traffic engineers from these states indicated that since installation of these signs, collisions cleared faster and motorists were more inclined to move to the shoulder after a collision.

Existing California Law:

Vehicle Code Section 20002(a) "The driver of any vehicle involved in an accident resulting only in damage to any property, including vehicles, shall immediately stop the vehicle at the nearest location that will not impede traffic or otherwise jeopardize the safety of other motorists. Moving the vehicle in accordance with this subdivision does not affect the question of fault."

Proposed California Signage:

"No crash injuries? Move To Side If Safe"

"No Injuries? Safely Move Damaged Vehicle To Nearest Shoulder"

"No Injuries? Don't Impede Traffic. Safely Move Damaged Vehicles To Shoulder"

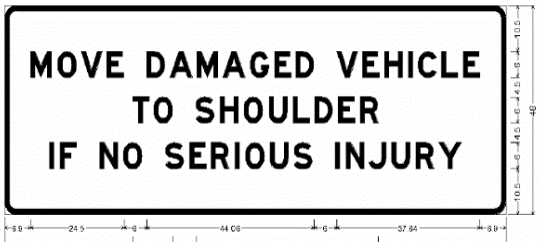
"Minor Collision? Safely Move Damaged Vehicle Out of Road"

Examples from other states:

Washington State

Florida

Tennessee



California Vehicle Code 20002 is as follows:

Permissible Action: Duty Where Property Damaged
20002. (a) The driver of any vehicle involved in an accident resulting only in damage to any property, including vehicles, shall immediately stop the vehicle at the nearest location that will not impede traffic or otherwise jeopardize the safety of other motorists. Moving the vehicle in accordance with this subdivision does not affect the question of fault. The driver shall also immediately do either of the following:
(1) Locate and notify the owner or person in charge of that property of the name and address of the driver and owner of the vehicle involved and, upon locating the driver of any other vehicle involved or the owner or person in charge of any damaged property, upon being requested, present his or her driver's license, and vehicle registration, to the other driver, property owner, or person in charge of that property. The information presented shall include the current residence address of the driver and of the registered owner. If the registered owner of an involved vehicle

is present at the scene, he or she shall also, upon request, present his or her driver's license information, if available, or other valid identification to the other involved parties.
(2) Leave in a conspicuous place on the vehicle or other property damaged a written notice giving the name and address of the driver and of the owner of the vehicle involved and a statement of the circumstances thereof and shall without unnecessary delay notify the police department of the city wherein the collision occurred or, if the collision occurred in unincorporated territory, the local headquarters of the Department of the California Highway Patrol.
(b) Any person who parks a vehicle which, prior to the vehicle again being driven, becomes a runaway vehicle and is involved in an accident resulting in damage to any property, attended or unattended, shall comply with the requirements of this section relating to notification and reporting and shall, upon conviction thereof, be liable to the penalties of this section for failure to comply with the requirements.
(c) Any person failing to comply with all the requirements of this section is guilty of a misdemeanor and, upon conviction thereof, shall be punished by imprisonment in the county jail not exceeding six months, or by a fine not exceeding one thousand dollars ($1,000), or by both that imprisonment and fine.
Amended Ch. 621, Stats. 1992. Effective January 1, 1993.
Amended Sec. 1, Ch. 421, Stats. 1999. Effective January 1, 2000.
Amended Sec. 16, Ch. 825, Stats. 2001. Effective January 1, 2002.

06- 6 Wildlife Corridor Signs

FRIENDS OF THE MOUNTAIN, INC.
P.O. Box 490 Rim Forest, California 92378 Phone (909) 744-9696
friendsofthemountain@charter.net

Devinder Singh
Senior Transportation Engineer
Executive Secretary, CTCDC
1120 N Street MS36
Sacramento, CA 95814

May 5, 2005

Re: CTCDC Application for Experimental Signs

Dear Mr. Singh,

We are proposing the installation of *Wildlife Corridor Signs* to be placed on the highways and roadways of San Bernardino County.

These signs will help to promote traffic safety, public safety and the safety of the wildlife in these areas by raising the awareness of the public regarding the presence of wildlife in this region.

Yucaipa Animal Protection, Moonridge Zoo and Friends of the Mountain will collectively oversee The *Wildlife Corridor Sign* project and it will be implemented by the County of San Bernardino. We have been working closely with Danielle Borish, Field Representative of Third District Supervisor Dennis Hansberger's office.

Enclosed you will find the CTCDC Application completed as detailed as I can make it until I speak with you. Also I have included a list showing contents of Application packet, an overview detailing the project by Kandie Cansler, Wildlife Rehabilitation Coordinator Region Six Calif. Dept. of Fish and Game, support letters from Danielle Borish, Field Representative for San Bernardino County 3rd District Supervisor Dennis Hansberger, California Department of Fish and Game and The United States Forest Service. Also attached are actual photos of the signs being used in the City of Yucaipa.

If you need further information please contact me by phone or email.

Thank you for your consideration of this project.

Very Truly yours,

Carol Pedder, President

CTCDC

STATUS OF EXPERIMENT

Date May 5, 2006

Item _____ Experiment: Wildlife Corridor Signs

Sponsor: Friends of the Mountain, Inc.

Supporting Agency & Contact: San Bernardino County Board of Supervisors, Third District Supervisor Dennis Hansberger, Danielle Borish Field Representative (909) 387-4525.

Next Appearance Before the CTCDC: June 14, 2006

Milestones _____ _____

_____ _____

_____ _____

_____ _____

Status _____

_____

_____

_____

_____

_____

_____

Applicant's Signature

Applicant's Name Carol J. Pedder President, Friends of the Mountain, Inc.,
Address P.O. Box 490 Rim Forest, CA 92378
Phone FAX (909) 337-6337

List of Attachments

Cover Letter

CTCDC Application

Outline of proposal

Overview of Sign Project 2005-2006, Kandie Cansler, Wildlife Rehabilitator Co-Ordinator Region Six California Department of Fish and Game

Letter from Danielle Borish Field Representative to San Bernardino County Third District Supervisor Dennis Hansberger showing, support for the Wildlife Corridor Sign project.

Support Letters from California Department of Fish and Game and US Forest Service

Pictures of current signs installed in the City of Yucaipa

WILDLIFE CORRIDOR SIGN PROGRAM
Overview as of 2005 – 2006

The Wildlife Corridor Sign Program is committed to fostering the preservation of wildlife that competes for space in areas of urban development and was created to enhance and also to put into practice an alternative way to deal with our wildlife in the Yucaipa and Calimesa areas who believe that wildlife and its habitat are a natural and important part of our urban neighborhoods and can co-exist in harmony. Both communities have endorsed and are implementing the Wildlife Corridor Sign Program, by education and bringing awareness to the public. Allowing a choice on how to handle the wildlife issues, a choice whether to call the California Department of Fish and Game or the Wildlife Corridor Sign Program. This program in the beginning was started in part by the CPUW (Citizens for the Protection of Urban Wildlife), and now has blossomed into the Wildlife Corridor Sign Program. Designed to be a very simple program, education and information, with a pro-active approach to integrate our wildlife into our urban sprawl with the least amount of impact to either.

The Wildlife Corridor Sign Program is designed by Yucaipa Animal Placement Society, operated by a volunteer base of committed, respected individuals approved by the Dept. of Fish and Game in each of the outlined areas. This is the first program endorced, recommended and embraced by the Dept. of Fish and Game as a way to keep our wildlife safe, by educating first, providing the approved information to the public, troubleshooting the problem on site, then if all efforts have failed to have the Dept. of Fish and Game administer the appropriate humane ending for the animal without compromising public safety. With any and all calls of importance, the Dept. of Fish and Game will be informed of the situation. The Wildlife Corridor Program will not, nor do we intend to interfere with the work of the Dept. of Fish and Game, only to work with the Dept. to benefit the wildlife in our areas.

Each area that implements the sign program would be affiliated with someone in that given area who is qualified to handle the incoming calls and they would either deal with the situation or forward it on to the appropriate officials of that community, Fish and Game or both.

The Wildlife Corridor Sign Program has no position on growth, environment or any other related issues. Our only mission and goal is to find ways through education and information to protect our ever declining wildlife species in our area by bringing awareness in the form of our Wildlife Corridor Signs which provides alternative information while celebrating our natural habitat.

The Goal of The Wildlife Corridor Program: Install the Wildlife Corridor Signs in all areas where human to wildlife encounters may occur.

In the case of the City of Yucaipa, Wildlife Corridor Maps were consulted in conjunction with current City Maps then locations were chosen for sign placement where new and existing housing encountered areas where wildlife is known to exist, or simply pass through.

The option is then made available to the public who either live or are using the area for recreation, to contact one of the numbers on the signs to report a problem animal, ask a question concerning a situation in their neighborhood regarding exclusionary techniques etc. The results thus far have been well received by the public. They appreciate the effort to inform them as well as protect the wildlife.

Sincerely,
Kandie Cansler
Wildlife Rehabilitator Co-Ordinator Region Six Calif. Dept. Fish and Game

Board of Supervisors
County of San Bernardino

DENNIS HANSBERGER
SUPERVISOR, THIRD DISTRICT

May 5, 2006

Mr. Devinder Singh, CTCDC
Senior Transportation Engineer
Executive Secretary, CTCDC
1120 N. Street, MS36
Sacramento, CA 95814

RE: WILDLIFE CORRIDOR SIGNS

Dear Mr. Singh,

My name is Danielle Borish, Field Representative to Dennis Hansberger, Third District Supervisor of San Bernardino County.

The Supervisor recently met with a non-profit organization called Friends of the Mountain, directed by Carol Pedder. The intention of the organization is to work for the common good of the mountain by protecting its residents, visitors, wildlife, and of course the environment.

The first major project brought forth by Friends of the Mountain, is the strategic placement of wildlife corridor signs throughout San Bernardino County. The purpose of these signs is to protect the public as well as the wildlife.

These signs will inform members of the public, specifically nearby homeowners, hikers, and tourists that animals such as bears, mountain lions, and coyotes frequent these areas. The signs also remind people to be aware of their surroundings and respectful of the environment. In the event a concerned passerby has a question or concern, the signs will have California's Fish and Game and Yucaipa's Animal Placement Society contact information.

Supervisor Hansberger is supportive of this project, as it is his intent to protect the mountain communities. On behalf of Supervisor Hansberger, I solicit your views on the matter and hope you will give consideration to the application before you.

Sincerely,
Danielle Borish
Field Representative

San Bernardino County Government Center • 385 North Arrowhead Avenue, Fifth Floor • San Bernardino, CA 92415-0110 • (909) 387-4855
Yucca Valley Office • 57407 Twentynine Palms Highway • Yucca Valley, CA 92284 • (760) 228-5400
Big Bear Lake Office • 477 Summit Boulevard • Big Bear Lake, CA 92315 • (909) 866-0140

United States Department of Agriculture
Forest Service
San Bernardino National Forest
1824 S Commercenter Circle
San Bernardino, CA 92408
909-383-5588 (Voice)
909-383-5770 (FAX)
909-383-5616 (TTY)

Date: May 4, 2006

To: Carol Pedder

Subject: Wildlife Corridor Sign Program for San Bernardino Mountains

I received the pictures of the proposed sign with the icons of the bear,mountain lion and coyote. The sign seems very appropriate for the situation we have in the area and should go a long way in protecting wildlife habitat and providing for public safety.

We appreciate your efforts in this regard and the work you are doing should benefit the National Forest. Please keep us informed of your progress and let us know if there is anything we can do to help.

/s/
Steve Loe

Sherri,

I received the fax of the proposed sign with the icons of the bear, mountain lion and coyote. The sign does what a sign should do by providing quick information that takes little effort to absorb its basic meaning. As we know in the age of instant communication people want their information quick and easy.

Yucaipa's program is taking a positive approach to human and wildlife interaction by being available to constituents that have concerns relating to animals. The approach that you are using with the Department of Fish and Game is also appreciated since this agency also has public safety and permit responsibilities in the same human-wildlife arena.

I recommend other local agencies learn from the cooperative approach of Yucaipa. When a city through education, community interaction and later, if necessary, appropriate code enforcement/regulation (trash control etc) resolves citizen concerns in a proactive manner it may prevent escalation of human-wildlife situations.

In short, thank you for the terrific effort and cooperative atmosphere that has been generated by your wildlife program.

Mike McBride
Assistant Chief
California Department of Fish and Game


City of Yucaipa
WILDLIFE CORRIDOR
RESPECT OUR NEIGHBORS
ENJOY OUR SHARED HABITAT


City of Yucaipa
WILDLIFE CORRIDOR

06-7 MUTCD 2003 Revision No. 1 (Pharmacy Signing)

Change List for Revision No. 1 of the 2003 Edition of the MUTCD, dated November 2004
This change list was developed to acquaint readers of the 2003 Edition of the Manual on Uniform Traffic Control Devices (MUTCD) with the changes that have been incorporated into the MUTCD with Revision No. 1, dated November 2004. This change list compares the 2003 MUTCD with Revision No. 1 final text and figures incorporated to the original 2003 Edition of the MUTCD, dated November 2003, which was the version that was printed and sold by AASHTO, ATSSA, and ITE.
Note that, in the PDF version of the 2003 Edition of the MUTCD with Revision No. 1 incorporated, a black vertical line and the notation "Rev. 1" in the margin alongside a particular paragraph or figure denotes the location of the changes that have been made with Revision No. 1.
All references to Parts, Chapters, Sections, figures, tables, paragraphs, items, and pages in this change list refer to the 2003 MUTCD.

General
The front cover, spine, and inside cover of the MUTCD as well as the cover page of Part 2 have been revised to indicate "Including Revision No. 1 dated November 2004" directly under the words "2003 EDITION".

Part 2 Signs
Chapter 2D Guide Signs – Conventional Roads
Section 2D.45 General Service Signs (D9 Series)

On Page 2D-23, in Figure 2D-11, the D9-20 Pharmacy symbol sign and the D9-20a "24 HR" plaque were added.
Also on Page 2D-23, the first Standard was revised to remove the list of various legends for various services, making this sentence general in nature.
Also on Page 2D-23, the second Standard was expanded to add a second sentence, requiring that the Pharmacy (D9-20) sign shall only be used to indicate the availability of a pharmacy that is open, with a State-licensed pharmacist present and on duty, 24 hours per day, seven days per week and that is located within 3 miles of an interchange on the Federal-aid system, and a third sentence requiring that the D9-20 sign shall have a 24 HR (D9-20a) plaque mounted below it.

Chapter 2E Guide Signs – Freeways and Expressways
Section 2E.51 General Service Signs
On Page 2E-56, existing Item F (Camping) was relabeled to become Item G, and a new Item F was inserted containing the criteria for general service signing for 24-hour pharmacies.
Also on Page 2E-56, in the last Standard statement on the page, the last sentence of the first paragraph of that Standard was revised to add 24-Hour Pharmacy to the list of services for which one or more legends shall be carried on General Service signs.

On Page 2E-57, Figure 2E-42 was revised to add illustrations of alternative examples of D9-18a and D9-18 signs that include the word or symbol for "24-HR PHARMACY" in lieu of the word or symbol for "CAMPING". In these added examples, the exit number is shown as "EXIT 38".
On Page 2E-58, the second Option statement on that page was revised to change the parenthetical phrase "(four services)" in the first sentence of this paragraph to "(four or six services)" and to change the final sentence of this paragraph to allow the 24-Hour Pharmacy

(D9-20 and D9-20a) symbol as well as the Tourist Information (D9-18) symbol to be substituted on symbolic (D9-18) General Service signs.

Chapter 2F Specific Service Signs

Section 2F.01 Eligibility

On Page 2F-1, in the second Standard statement on this page, a new third paragraph was added to require that distances to eligible 24-hour pharmacies shall not exceed 4.8 km (3 miles) in any direction of an interchange on the Federal-aid system.

Also on Page 2F-1, in the third Guidance statement on this page, the phrases "Except as noted in the Option below" and "other than pharmacies" were added. In addition, the word "either" was changed to "any" in recognition of the fact that in some cases there are more than two directions from which drivers can depart from an interchange.

Also on Page 2F-1, in the second Option statement on this page, the phrase "other than pharmacies" was added.

On Page 2F-2, a new Standard statement was added at the end of Section 2F.01 listing the criteria that must be met for a pharmacy to qualify for Specific Service signing if a jurisdiction elects to provide Specific Service signing for pharmacies.

Section 2F.02 Application

On Page 2F-2, the first paragraph of the Standard statement of this Section was revised to include 24-hour pharmacy as the first service type that is to be displayed in successive Specific Service signs in the direction of traffic. Also, the first sentence of the second paragraph of this Standard statement was revised to add 24-HOUR PHARMACY to the list of word messages on Specific Service signs.

Also on Page 2F-2, the first paragraph of the Option statement of this Section was deleted, as this topic was deemed to be adequately addressed by the first Option statement of Section 2F.01.

Section 2H.04 General Design Requirements for Recreational and Cultural Interest Area Symbol Signs

On Page 2H-2, in Table 2H-1, in the category of Motorist Services, the 24-Hour Pharmacy symbol was added as new number RM-230.

Section 2H.08 Placement of Recreational and Cultural Interest Area Symbol Signs

On Page 2H-9, in Figure 2H-5 (Sheet 2 of 5), the figure was revised to add the 24-Hour Pharmacy (RM-230) symbol

The Pharmacy signing was discussed during the August 2004 meeting and the following is the summary of the discussion:

Chairman Fisher asked Gerry Meis to introduce agenda item 04-4 Pharmacy Signing.

Gerry pointed out that MUTCD 2003 Revision No. 1 language has been included in the agenda packet. The Pharmacy signing will be included in the federal manual effective July 21, 2004. The States have two years to adopt the policy. The pharmacy-signing requirement was included in federal legislation. The sign shall only be used to indicate the availability of a pharmacy that is open, with a State-licensed pharmacist on duty, 24 hours per day, seven days per week and it is located within 3 miles of an interchange on the Federal-aid system. Gerry stated that he personally is not supportive of the sign.

Jacob Babico stated that this sign is similar to fire station signs that are open 24 hour per day, seven days per week.

Hamid inquired whether the sign would only be applicable on freeways and would sign be required on local streets?

Gerry responded that the general practice is if a service sign is placed on a freeway, then trail-blazing signs must be installed on the local system to guide motorists to their destination.

Chairman Fisher commented that he does not support pharmacy signing because there is signing to hospitals and there does not appear to be a demonstrated need for pharmacy signs.

Chairman Fisher opened the item for public comments.

Matt Schimtz, FHWA, stated that this is the first opportunity for the Committee to take action on a MUTCD Revision following adoption of the MUTCD 2003 in California. He encourages the Committee to take action carefully, either to adopt or not adopt pharmacy signing in California. The actual implementation date is not until July 2006.

There were no other comments.

Motion: Moved by John Fisher, seconded by Gerry Meis, recommending not to adopt the MUTCD Revision No. 1, Pharmacy signing in California.

Motion Carried 8-0

Action: Item completed and closed.

06-8 FHWA's Interim Approvals for Optional Use of Traffic Control Devices

During the February 2006 CTCDC meeting, Committee members recommended to place this item on agenda to see whether California should request Interim approval for all jurisdiction for the following traffic control devices which have received interim approval from the FHWA

Item 1
Interim Approval for Optional Use of Flashing Yellow Arrow for Permissive Left Turns (IA-10)

Memorandum

U.S. Department of Transportation **Federal Highway Administration**

Subject: **INFORMATION:** MUTCD – Interim Approval for Optional Use of Flashing Yellow Arrow for Permissive Left Turns (IA-10) Date: March 20 , 2006

From: Original signed by:
Jeffrey F. Paniati, Associated Administrator for Operations

To: Division Administrators
Resource Center Director and Operations Managers
Federal Lands Highway Division Engineers

Purpose: The purpose of this memorandum is to issue an Interim Approval for the optional use of a flashing yellow arrow (FYA) signal indication as the signal display for left-turn movements during permissive turn intervals at signalized locations. Interim Approval allows interim use, pending official rulemaking, of a new traffic control device, a revision to the application or manner of use of an existing traffic control device, or a provision not specifically described in the MUTCD.

Background: For many years, some engineers have had concerns that drivers turning left on a permissive circular green signal indication might inadvertently mistake that indication as implying the left turn has the right of way over opposing traffic, especially under some geometric conditions. A variety of different indications and signal face arrangements for permissive left turns have been tried over the years by road authorities, but no comprehensive research had been conducted to evaluate all the potential displays.

Research on the Flashing Yellow Arrow: National Cooperative Highway Research Program (NCHRP) Project 3-54, Evaluation of Traffic Signal Displays for Protected/Permissive Left-Turn Control, was initiated in the mid-1990s for the purpose of conducting the necessary definitive research to evaluate the wide variety of potential displays for permissive left-turn movements. Over a 7-year period, a very comprehensive research process was conducted, including engineering analyses, static and video-based driver comprehension studies, field implementation, video conflict studies, and crash analyses. In 2003, the completed research was published as NCHRP Report 493. The full report may be accessed via the Interim Approvals page of the MUTCD website at http://mutcd.fhwa.dot.gov. Key findings of the research include:

- The FYA was found to be the best overall alternative to the circular green as the permissive signal display for a left-turn movement.
- FYA was found to have a high level of understanding and correct response by left-turn drivers, and a lower fail-critical rate than the circular green.
- The FYA display in a separate signal face for the left-turn movement offers more versatility in field application. It is capable of being operated in any of the various modes of left-turn operation

by time of day, and is easily programmed to avoid the "yellow trap" associated with some permissive turns at the end of the circular green display.

The NCHRP Report 493 recommends that the FYA be allowed as an alternative to the circular green for permissive left-turn intervals. It also recommends certain specific signal face arrangements and locations, based on driver understanding and performance.
Subsequent to the publication of the NCHRP research, FHWA has approved additional experimentation with the FYA by numerous jurisdictions. Although these experimentations are still in progress, initial results have been positive and supportive of the NCHRP research findings.

FHWA Evaluation of Results: The Office of Transportation Operations has reviewed the research and subsequent additional experimentation and considers the FYA to be successful. Motorists responded strongly and favorably to the concept with little or no public information; these highway users intuitively knew what the flashing yellow arrow meant. The FHWA believes that the FYA has a low risk of safety or operational concerns. Further, the optional use of the FYA provides safety and operational benefits that merit earlier implementation by agencies that wish to use it, pending official MUTCD rulemaking. FYA provides the ability to easily implement lead-lag left-turn phasing and/or variable phasing by time of day, without revising signal hardware and without creating the "left-turn yellow trap" that can occur with the traditional circular green display. Discussions at recent meetings of the National Committee on Uniform Traffic Control Devices (NCUTCD) indicate a consensus in the practitioner community in support of optional use of the FYA. There is a low risk of negative reactions by industry or specific manufacturers or suppliers, and FHWA does not perceive any adverse financial impacts. All existing signal manufacturers make standard signal faces capable of displaying the FYA for left-turn sequences. This Interim Approval does not create a new mandate compelling installation of the FYA for left turns, but for those agencies that do wish to use FYA, it is a low-cost measure to implement.

Conditions of Interim Approval: Interim Approval for the optional use of the FYA for a permissive left-turn indication will be granted to any jurisdiction that submits a written request to the Office of Transportation Operations. A State may request Interim Approval for all jurisdictions in that State. Jurisdictions using FYA under this Interim Approval must agree to maintain an inventory list of all locations where the devices are placed and to comply with Item F at the bottom of Page 1A-6 of the 2003 MUTCD, Section 1A.10 which requires: "An agreement to restore the site(s) of the Interim Approval to a condition that complies with the provisions in this Manual within 3 months following the issuance of a Final Rule on this traffic control device. This agreement must also provide that the agency sponsoring the Interim Approval will terminate use of the device or application installed under the Interim Approval at any time that it determines significant safety concerns are directly or indirectly attributable to the device or application. The FHWA's Office of Transportation Operations has the right to terminate the interim approval at any time if there is an indication of safety concerns."
If an agency opts to use FYA under this Interim Approval, the following design and operational requirements shall apply, and shall take precedence over any conflicting provisions of existing Section 4D.06 of the 2003 MUTCD for the approach on which FYA is displayed:

1. Mode(s) of Left-Turn Operation:
    a. The flashing YELLOW ARROW signal indication may be displayed to indicate a permissive left-turn movement in either a protected/permissive mode or a permissive only mode of operation.
    b. It is not necessary that the left-turn mode for an approach always be the same throughout the day. Varying the left-turn mode on an approach among the permissive only and/or the protected/permissive and/or the protected only left-turn modes during different periods of the day is acceptable.
2. Signal Face Arrangement:
    a. At least one separate four-section signal face, in addition to the minimum of two signal faces for other traffic on the approach, shall be provided for the left-turn movement. The

separate left-turn signal face shall be capable of displaying, from top to bottom (or left to right in a horizontally-aligned face), the following set of signal indications: Steady left-turn RED ARROW, steady left-turn YELLOWARROW, flashing left-turn YELLOW ARROW, and steady left-turn GREEN ARROW. If the left-turn movement is always operated in the permissive only mode, a separate three-section face shall be used instead, with the GREEN ARROW signal section omitted.

b. A CIRCULAR RED may be substituted for the RED ARROW in States where RED ARROWS are not in current use. If CIRCULAR RED is used instead of RED ARROW in the left-turn signal face, and the left-turn signal face sometimes displays a steady CIRCULAR RED signal indication at a time when the signal faces for the adjacent through movement are not displaying steady CIRCULAR RED signal indications, the CIRCULAR RED signal indication in the left-turn signal face shall be shielded, hooded, louvered, positioned, or designed such that it is not readily visible to drivers in the through lane(s) or a LEFT TURN SIGNAL sign (R10-10) shall be installed adjacent to the left-turn signal face.

c. A dual-arrow signal section (capable of alternating between the display of a steady GREEN ARROW and a flashing YELLOW ARROW signal indication during steady mode operation) may be used to reduce the total number of signal sections to three if physical conditions make it impractical to use a four-section signal face.

3. Signal Face Location: If an exclusive left-turn lane is present on the approach and if a left-turn signal face is mounted over the roadway, that left-turn signal face should be centered over the left-turn lane or the extension thereof. If centering of the overhead left-turn signal face is not practical, it shall not be positioned any further to the right than the lane line (or the extension of the lane line) between the left-turn lane and the adjacent through lane, nor shall it be positioned any further to the left than the left edge of the left-turn lane (or extension thereof.

4. Signal Displays:

a. During a protected left-turn movement, the left-turn signal face shall display only a steady left-turn GREEN ARROW signal indication.

b. During a permissive left-turn movement, the left-turn signal face shall display only a flashing left-turn YELLOW ARROW signal indication.

c. During a prohibited left-turn movement, the left-turn signal face shall display only a steady left-turn RED ARROW or a steady CIRCULAR RED.

d. A steady left-turn YELLOW ARROW signal indication shall be displayed following every steady left-turn GREEN ARROW signal indication.

e. A steady left-turn YELLOW ARROW signal indication shall be displayed following the flashing left-turn YELLOW ARROW signal indication if the permissive left-turn movement is being terminated and the left-turn signal face will subsequently display a steady red signal indication. The signal section that displays the steady left-turn YELLOW ARROW signal indication during change intervals shall not be used to display the flashing left-turn YELLOW ARROW signal indication for permissive left turns.

f. When a permissive left-turn movement is changing to a protected left-turn movement, a steady left-turn GREEN ARROW signal indication shall be displayed immediately upon termination of the flashing left-turn YELLOW ARROW signal indication. A steady left-turn YELLOW ARROW signal indication shall not be displayed between the display of the flashing left-turn YELLOW ARROW signal indication and the display of the steady left-turn GREEN ARROW signal indication.

g. During flashing mode operation (see Section 4D.12), the display of a flashing left-turn YELLOW ARROW signal indication shall be only from the signal section that displays a steady left-turn YELLOW ARROW signal indication during steady mode (stop-and-go) operation.

Any questions concerning this Interim Approval should be directed to Mr. Scott Wainwright at scott.wainwright@fhwa.dot.gov or by telephone at 202-366-0857.

Item 2

FHWA Policy Memorandums - Manual on Uniform Traffic Control Devices

{PRIVATE "TYPE=PICT;ALT=DOT Logo"}
U.S. Department of Transportation
Federal Highway Administration

Memorandum

Subject: **INFORMATION:** MUTCD – Interim Approval for Addition of RV Friendly Symbol to Specific Service Signs (IA-8)

Date: September 6, 2005

From: Jeffrey F. Paniati */s/Jeffrey F. Paniati*, Associate Administrator for Operations

Reply to Attn. of: HOTO-1

To: Division Administrators
Resource Center Managers
Federal Lands Highway Division Engineers

Purpose: The purpose of this memorandum is to issue an Interim Approval for the optional use of a symbol on specific service signs to indicate that a business has facilities that are "RV-friendly;" i.e., designed with facilities to accommodate the on-site movement and parking of recreational vehicles (RVs). The RV Friendly symbol is not currently specifically described in the Manual on Uniform Traffic Control Devices (MUTCD). Interim Approval allows interim use, pending official rulemaking, of a new traffic control device, a revision to the application or manner of use of an existing traffic control device, or a provision not specifically described in the MUTCD.

Background: Motorists driving RVs, motor homes, and/or towing trailers may experience difficulty in identifying and locating service facilities that have large parking spaces and other amenities that over-sized vehicles need. A study in Oregon has found that a simple RV Friendly symbol provides easy recognition and advance notice to motorists and informs them that maneuvering their vehicle at specific facilities is not a problem. The RV Friendly symbol alerts RV motorists to those roadside specific services that cater to the special needs of motor homes and RV trailer combinations.

Research on the RV Friendly Symbol: In April 2003, the FHWA approved a request from the Oregon Department of Transportation to experiment with the RV Friendly program developed by the Oregon Travel Information Council (OTIC) and the Family Motor Coach Association. The experiment was conducted from June through August 2003 on Interstate 5 between exit 233 and exit 278. Existing businesses on specific service signs along Interstate 5 were screened by the OTIC to see if they met the criteria they determined necessary for participation in the RV friendly program. The OTIC installed the RV Friendly symbol on the business logo panels and delivered to each business a set of follow-up symbols to guide RV motorists onto the site location of their services. Public awareness and media education was conducted. Based upon a successful experimentation for a limited number of locations, approval to expand the experimentation was granted on May 17, 2004.
Evaluation included design studies to determine visibility of the symbol, customer questionnaire surveys, and business interviews. The complete evaluation plan and report findings are posted on the Interim Approval page of the MUTCD website at http://mutcd.fhwa.dot.gov.

FHWA Evaluation of Results: The Office of Transportation Operations has reviewed the Oregon experimentation and considers it to be successful. Motorists traveling in RVs and pulling trailers responded strongly and favorably to the concept with only modest public information; these highway users intuitively knew what the symbol meant. We believe that this new symbol sign has a low risk of safety or operational concerns. Further, the optional use of the RV Friendly symbol on specific service signs provides operational benefits to certain road users that merit earlier implementation by agencies that wish to use it, pending official MUTCD rulemaking. The optional use of the RV Friendly symbol on specific service signs is a low cost measure, as this addition does not require the replacement of specific service signs themselves. Discussions at a recent meeting of the National Committee on Uniform Traffic Control Devices (NCUTCD) indicate a consensus in the practitioner community in support of optional use of the RV Friendly symbol under an Interim Approval. The RV Friendly Program is popular among all aspects of the industry. This Interim Approval does not create a new mandate compelling installation of the RV Friendly symbol signs.

Conditions of Interim Approval: Interim Approval for the optional use of the RV Friendly symbol will be granted to any jurisdiction that submits a written request to the Office of Transportation Operations. A State may request Interim Approval for all jurisdictions in that State. Jurisdictions using devices under an Interim Approval must agree to maintain an inventory list of all locations where the devices are placed and to comply with item F at the bottom of page 1A-6 of the 2003 MUTCD, Section 1A.10 which requires:

> "An agreement to restore the site(s) of the Interim Approval to a condition that complies with the provisions in this Manual within 3 months following the issuance of a Final Rule on this traffic control device. This agreement must also provide that the agency sponsoring the Interim Approval will terminate use of the device or application installed under the Interim Approval at any time that it determines significant safety concerns are directly or indirectly attributable to the device or application. The FHWA's Office of Transportation Operations has the right to terminate the interim approval at any time if there is an indication of safety concerns."

If State or local agencies elect to participate in the RV Friendly Program, they shall have a policy for selecting eligible businesses and facilities that includes at a minimum the following:

- Roadway access and egress must be hard surface, free of potholes and need to be at least 12 feet wide with a minimum swing radius of 50 feet to enter and exit the facility.
- Roadway access, egress, and parking facilities must be free of any electrical wires, tree branches, or other obstructions up to 14 feet above the surface.
- Facilities requiring short-term parking such as restaurants or tourist attractions, are required to have 2 or more spaces that are 12 feet wide and 65 feet long with a swing radius of 50 feet to enter and exit the spaces.
- Fueling facilities with canopies are required to have a 14-foot clearance, and those selling diesel fuel are required to have pumps with non-commercial nozzles.
- Fueling facilities must allow for pull-through with swing radius of 50 feet.
- For campgrounds, 2 or more spaces that are 18 feet wide and 45 feet long are required.
- Businesses must also post directional signing on their sites, as needed, to those RV friendly parking spaces and other on-site RV friendly services, so that the motorist is given additional guidance upon leaving the public highway and entering the business establishment's property.

The following design requirements shall apply:

- The design of the RV Friendly symbol is a 12-inch diameter, yellow circle with a ½-inch black border.
- The black upper case letters "RV" are inside the circle and they are 8 inches in height.

- When used, the RV Friendly symbol is located in the lower right-hand corner of the business or specific service logo in a manner in which it touches both the specific service logo and the blue sign panel. An example is attached and included on the MUTCD website.
- Care should be taken to ensure that enough space exists so that the RV Friendly symbol does not overlap with the logos of other non-participating businesses included on the specific service sign.

State or local highway agencies requesting Interim Approval may suggest other color combination designs for FHWA consideration.

Any questions concerning this Interim Approval should be directed to Ms. Linda Brown at Linda.L.Brown@fhwa.dot.gov or by telephone at 202-366-2192.

Item 3
INFORMATION: MUTCD – Interim Approval for Use of Clearview Font for Positive Contrast Legends on Guide Signs September 2, 2004

Regina S. McElroy **for /s/ Vince P. Pearce**
Director, Office of Transportation Operations HOTO-1

Division Administrators
Resource Center Directors
Federal Lands Highway Division Offices

Purpose: The purpose of this memorandum is to issue an Interim Approval for the optional use of the Clearview font for positive contrast legends on guide signs
Research on the Clearview font: The Clearview font was developed through a decade of research starting in the early 1990s. The goal of the Clearview font was to increase legibility and reduce halation of highway sign legends in comparison to that of Standard Highway Signs (SHS) Alphabets (Highway Gothic font). This research development effort resulted in final design of Clearview font letters in 2003. Clearview font letters were developed specifically to address four issues with the legibility of SHS alphabets. They are:
• Upgrade highway signing word messages to accommodate the needs of older drivers without increasing the capital letter height and the overall length and height of word messages and the signs themselves,
• Improve word pattern recognition by using mixed case words of the same size composed of lower case letters designed for highway sign applications,
• Improve the speed and accuracy of destination recognition and the legibility distance of word messages, and
• Control or minimize the halation of words displayed on high brightness retroreflective materials for drivers with reduced contrast sensitivity.
The legibility of positive contrast Clearview legends for guide signs has been researched by the Pennsylvania Transportation Institute (PTI) and the Texas Transportation Institute (TTI). This research information can be accessed via the MUTCD website (**http://mutcd.fhwa.dot.gov**)
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Key conclusions of the research are:
• 16 percent improvement in recognition by older drivers for equal size footprint for SHS Alphabet Series D letters and Clearview-Condensed with little change in overall sign size – two PTI studies *(*Garvey, P.M., M.T. Pietrucha, and D. Meeker. Effects of Font and Capitalization on Legibility of Guide Signs. In *Transportation Research Record 1605*, TRB, National Research Council, Washington, DC, 1997, pp. 73-79*)*.
• 12 percent increase in legibility for overhead and shoulder-mounted guide signs using ASTM D4956 microprismatic sheeting Types VII, VIII, or IX – TTI study.
(Gene Hawkins and Paul Carlson FHWA/TX-02/4049-1 Evaluation of Clearview Alphabet with Microprismatic Retroreflective Sheetings, 2001).
The initial research on Clearview was conducted at the Pennsylvania Transportation Institute. In two PTI studies intended for conventional road guide signs, use of an early version of the Clearview Bold improved nighttime sign reading distance by up to 16 percent when compared with the E-modified road sign typeface. For drivers traveling at 45 mph, that legibility enhancement could easily translate into 80 extra feet of reading distance, or a substantial 1.2 seconds of additional reading time. On a road with a posted speed of 45 mph, a driver is traveling at 66 feet per second. With Clearview-Bold, the desired destination legend is recognized 1.3 seconds earlier (84 feet) and with greater accuracy, giving the driver significantly more time to react to the information displayed.
By allowing a viewer to read the unique footprint of the word when displayed in upper/lowercase letters, there is an increase in accuracy, viewing distance, and reaction time. The research revealed that when the upper/lowercase Clearview-Condensed (condensed) is compared to the most commonly used all-capital-letter typeface (FHWA Series D), there was a 14 percent increase in recognition when viewed by older

drivers at night, with no loss of legibility. When the size of Clearview-Condensed was increased by 12 percent to equal the overall footprint of the uppercase display, the recognition gain doubled to 29 percent with little change in overall sign size.
The first Texas Transportation Institute (TTI) research study compared full-scale freeway guide signs using Clearview-Bold and E-modified alphabets. Pilot testing at TTI indicated that there were significant differences in the legibility of full-scale signs as compared to the smaller signs tested at PTI, when viewed at design legibility distances (40 feet per inch). The first upgrade to Clearview involved refinement of the font prior to the testing at TTI. The testing of Clearview by TTI compared the revised typeface to Series E-modified.
The researchers evaluated shoulder and overhead mounted highway guide signs on Type III retroreflective sheeting. In this study, Clearview performed no worse than, and in some cases outperformed, Series E-modified. TTI then performed a second study of the two fonts, this time using microprismatic retroreflective sheeting. The results, as presented above, demonstrated an 11 to12 percent increase in the legibility distance for guide signs using Clearview.
3
Both the Pennsylvania and Texas Departments of Transportation have reviewed the research on the use of Clearview font for guide signs and have requested that Clearview font be allowed to be used for positive contrast guide signs.
Meeker & Associates Inc., have filed a disclaimer with the US Patent and Trademark Office disclaiming exclusive rights in the term "Clearview." The effect of this disclaimer will be to allow any jurisdiction to use the term "Clearview" by itself in connection with a typeface or font.
Conditions of Interim Approval: Spacing of Clearview font shall follow the spacing tables for Clearview, and not SHS E-modified. This includes the use of the Clearview 5-W(R) spacing tables for overhead conditions that may not accommodate a Clearview 5-W legend in replacement of existing E-modified legends. Action word messages and cardinal directions
shall remain in all upper case letters and the first upper case letter of a cardinal direction shall be 10 percent greater in height for conventional road guide signs as per Table 2E.1 through Table 2E.4 of the 2003 MUTCD for expressway/freeway guide signs. The Clearview font should not be used on negative contrast signs until research demonstrates the effectiveness.
Interim Approval for the use of Clearview font for positive contrast legend on guide signs will be granted to any jurisdiction that submits a written request to the Director of the FHWA Office of Transportation Operations. The request must state the location(s) where the devices will be used and the jurisdiction's agreement to comply with item F at the bottom of page 1A-10 of the 2003 MUTCD, part of Section 1A.10. A State may request Interim Approval for all jurisdictions in that State.
A general comparison guide for application to SHS Standard Alphabet letters is as follows:
SHS Standard Alphabet Clearview "W" series
Series B Clearview 1-W
Series C Clearview 2-W
Series D Clearview 3-W
Series E Clearview 4-W
Series E-Modified Clearview 5-W and Clearview 5-W-R*
Series F Clearview 6-W
* Clearview 5-W-R has tighter letterspace than 5-W and is designed for replacement of overhead guide signs in which the 5-W is too wide for the specific application. The use of Clearview font for positive contrast guide signs provides increased legibility of highway sign word messages at the same cost of SHS Standard Alphabet letters. A research study by FHWA published in 1994 recommended a 20 percent increase in letter height of SHS Alphabets for highway signs in order to accommodate the viewing distance and reaction time requirements of older drivers. The use of the Clearview font will help in achieving this increase in sign visibility. Therefore, the FHWA is issuing Interim Approval for Clearview so that this application may be used by jurisdictions that wish to do so pending the rulemaking.
Any questions concerning this Interim Approval should be directed to Mr. Fred Ranck at **fred.ranck@fhwa.dot.gov** or by telephone at 708-283-3545.

4FHWA:HOTO-1:FRanck/EHuckaby:69064:8-31-04 cc: HOTO-1 HOTO-1(EHuckaby/FRanck/LLBrown) Mr. Martin Knopp, HRC Mr. Bob Garrett, NCUTCD Mr. Roger Wentz, ATSSA Mr. James Barron, ATSSA Robin Fields, HCC-40 Mr. Ken Kobetsky, AASHTO Mr. Art Breneman, PennDOT Mr. Dan Van Gilder, HFTS-15 Chron 3408 Reader 3408 DF(Interim Approvals) M:\MUTCD\INTERIM APPROVALS\IA-5 Clearview font\083004Interim Appr#8E1-3.doc

Item 4

Memorandum Date: August 2, 2004

Subject: INFORMATION: MUTCD – Interim Approval for Use of the Wayside Horn System

Reply to Attn. of: HOTO-1

From: Regina S. McElroy */s/Regina McElroy*
Director, Office of Transportation Operations

To: A. George Ostensen, Associate Administrator for Safety
Division Administrators
Resource Center Directors
Federal Lands Highway Division Offices

Purpose: The purpose of this memorandum is to issue an Interim Approval for the optional use of wayside horn system (WHS) at highway-rail grade crossings.

Background Summary: The use of train horns provides an audible indication to road users of the approach of a train at a highway-rail grade crossing. Although this device provides a safety benefit to the road user, the community in close proximity to the railroad crossing can be subject to the sound impact of the train horn, which can occur any time of the day or night. To mitigate this problem, the Federal Railroad Administration (FRA) and the Federal Highway Administration (FHWA) Office of Safety have monitored over the past 10 years the development and implementation of a WHS. The WHS is located at the crossing and directed at oncoming motorists, which (1) simulates the sound and pattern of a train horn; (2) provides similar (or safer) response from road users, and (3) minimizes the audible impact on individuals located near the crossing (the WHS theory of operations is attached to this memo). Additionally, the FRA has documented an Interim Final Rule, entitled "Use of Locomotive Horns Highway-Rail Grade Crossings" (published in the *Federal Register* at 68 FR 70586 on December 18, 2003), which provides the use of train horns at public crossings and the use of the WHS.
Interim Approval for the WHS is hereby granted based on FRA's Interim Final Rule, as well as current deployments and evaluations.

Provisions for the WHS:
Option:
The wayside horn system may be installed in accordance with part 222 of title 49 of the Code of Federal Regulations (49 CFR) to provide directional audible warning at highway-rail grade crossings equipped with active traffic control devices consisting of, at a minimum, flashing lights and gates.

Standard:
The wayside horn system for use at active highway-rail grade crossings shall conform to the FRA's requirements for the wayside horn prescribed in Part 222 of 49 CFR, Appendix E.
As a minimum, the wayside horn system shall be installed for each roadway approach to the highway-rail grade crossing to provide audible warning.

Guidance:
A diagnostic review should be conducted by a diagnostic team to determine the optimal placement of the wayside horn system and to ensure the correct and most effective use of the system. The diagnostic team should be composed of railroad personnel, public safety or law enforcement, engineering personnel from the public agency with the responsibility for the roadway that crosses the railroad, and other concerned parties.

The highway agency or authority with jurisdiction should consider the inclusion of remote health (i.e., status) monitoring capable of automatically notifying maintenance personnel when anomalies have occurred within the system.
The wayside horn system should comply with the same lateral clearance and roadside safety features described in the MUTCD Section 8D.01. When a wayside horn is mounted on a separate pole assembly, it should be installed no closer than 4.6m (15 ft) from the centerline of the nearest track. In addition, a wayside horn should be located where the device will have optimal results, and not obstruct the motorists' line of sight to the flashing-light signals.

Conditions of Interim Approval: Jurisdictions wishing to install the WHS under this Interim Approval of WHS must meet the following conditions:
1. The use of WHS shall comply with provisions described in the above *Provisions for the WHS*.
2. A written request shall be submitted to the Director of the Office of Transportation Operations acknowledging the jurisdiction's agreement to comply with MUTCD Section 1A.10, item F. The request must also state the location(s) where the device will be used.
3. Jurisdictions shall be responsible to notify the FRA of installation of WHS as required in 49 CFR 222, and shall inform the FHWA of such notification in their written request to FHWA for interim approval.
Any questions concerning this Interim Approval should be directed to Ms. Guan Xu at **guan.xu@fhwa.dot.gov** or by telephone at 202-366-5892.

References:
1. 49 CFR Part 222
2. Wayside Horn System Interim Approval Request from A. George Ostensen
3. 2003 MUTCD Section 1A.10
Attachments:
Theory of WHS Operations
WHS Research Summary

UTheory of WHS OperationsU
The WHS system operates in conjunction with train operations. Under normal conditions at an active crossing, the train's locomotive will normally engage its horn approximately one-quarter of a mile from the crossing. The horn will continue to sound several additional times until the train enters the crossing. The WHS focuses the sound of the horn to the road user, thereby eliminating the requirement that the locomotive sound its horn from such a far distance (currently trains typically sound their horns a quarter-mile from the crossing). The WHS is located at the crossing on a pole in close proximity to the Crossbuck. Once the train has approached the crossing where the train horn would begin to blow its horn, the WHS is engaged. The WHS emits a digitized horn sound that is directed in the path of the user. Based on the location and orientation of the WHS, significant sound abatement is created for the general area surrounding the crossing, and provides a warning to road users approaching the crossing. Additionally, a visual signal is placed along the rail corridor's right-of-way in advance of the crossing to notify the locomotive engineer that the WHS is operating. Pursuant to FRA's Interim Final Rule (49 CFR 222, Appendix E), the locomotive engineer has the right to engage the onboard train horn, when it is determined that it is in the best interest in safety (for both the road user and the train).
WHS Research Summary
The effectiveness of the WHS has been studied and documented over 10 years at active highway-rail grade crossings, and has shown substantial benefits to such grade crossings. The studies were conducted by agencies/organizations such as the FRA, Volpe Center; Northwestern University; City of Richardson, Texas; Association of American Railroads; Iowa State University, and Texas Transportation Institute. Key conclusions of the studies include:

• The studies showed significant reduction (more than 50 percent) in the number of motorists' violations of the crossing gates as compared to the baseline data collected with the train horns sounding.
• The WHS was well accepted by both motorists and locomotive engineers.
• The WHS gives equal or greater audible notification as compared to train horns.
• The WHS provides a good balance between providing adequate advance notification to road users and minimizing community noise levels.
• The WHS appears to continue to be an effective alternative to the locomotive horn.

Item 5

INFORMATION: MUTCD – Interim Approval for Use of Retroreflective Border on Signal Backplates February 6, 2004

Regina S. McElroy */s/ Regina McElroy*
Director, Office of Transportation Operations HOTO-1

Division Administrators
Resource Center Directors
Federal Lands Highway Division Offices

Purpose: The purpose of this memorandum is to issue an Interim Approval for the optional use of retroreflective borders on traffic signal backplates.

Background: Section 1A.10 of the 2003 edition of the Manual on Uniform Traffic Control Devices (MUTCD) contains a new provision authorizing the Federal Highway Administration (FHWA) to issue Interim Approvals. Such approvals allow the interim use, pending official rulemaking, of a new traffic control device, a revision to the application or manner of use of an existing traffic control device, or a provision not specifically described in the MUTCD. Interim approvals are considered by the Office of Transportation Operations based on the results of successful experimentation, studies, or research, and an intention to place the new or revised device into a future rulemaking process for MUTCD revisions.

Research on Retroreflective Backplate Borders: The addition of a retroreflective border strip around the outside edge of the front surface of traffic signal backplates to enhance signal conspicuity has been thoroughly researched in the Province of British Columbia in Canada. The research over a period of 7 years is summarized in the final report for Project 216 of the National Committee on Uniform Traffic Control of Canada, and has culminated in recommended revisions to the Canadian MUTCD. This research information can be accessed via the MUTCD website (http://mutcd.fhwa.dot.gov). Key conclusions of the research are:

• • • •

15 percent to 24 percent reductions in total crashes, especially rear-end type crashes, after addition of the backplate borders.

Benefit/Cost Ratio of approximately 10.
Retroreflective border provides a distinctive frame around the traffic signal display at night, allowing road users to more readily locate the signal face among background lighting.
Retroreflective border assists road users in detecting the presence of a major (signalized) intersection during nighttime power outage conditions.

Additional Related Information: Section 4D.17 of the 2003 MUTCD states that "the use of a signal backplate for target value enhancement should be considered on signal faces viewed against a bright sky or bright or confusing backgrounds." It further states that "the use of backplates enhances the contrast between the traffic signal indications and their surroundings for both day and night conditions, which is also helpful to elderly drivers." Section 4D.18 states that "the front surface of backplates shall have a dull black finish to minimize light reflection and to increase contrast between the signal indication and its background." The National Committee on Uniform Traffic Control Devices (NCUTCD) has reviewed the Canadian research on this subject and has recommended to the FHWA that text be added to the next edition of the MUTCD to specifically allow the optional use of a yellow retroreflective strip no wider than 75 mm
(3 inches) around the perimeter of the face of backplates to project a rectangular appearance at night. Retroreflective backplate borders have been in widespread use for many years in many European countries and in Australia. The use of retroreflective backplate borders appears to provide positive safety

benefits at relatively low cost. Therefore, the FHWA intends to propose amending the MUTCD to specifically allow such borders in a future MUTCD rulemaking. The FHWA is issuing Interim Approval for this use so that this application may be used by jurisdictions who wish to do so pending the rulemaking.

Conditions of Interim Approval: Interim Approval for the use of a yellow retroreflective strip at least 25 mm (1 inch) wide and no wider than 75 mm (3 inches) around the perimeter of the face of signal backplates to project a rectangular appearance at night will be granted to any jurisdiction that submits a written request to the Director of the Office of Transportation Operations. The request must state the location(s) where the device will be used and the jurisdiction's agreement to comply with item F at the bottom of page 1A-10 of the 2003 MUTCD, part of Section 1A.10. A State may request Interim Approval for all jurisdictions in that State.

Please note that at this time the MUTCD does not specify minimum retroreflectivity levels for traffic control devices. However, it is known that modern headlight design limits the amount of light reflecting from devices mounted over the road. Therefore, to obtain maximum benefits from the retroreflective backplate border on overhead-mounted signal faces, jurisdictions should consider using a type of retroreflective sheeting for this border that is specifically designed for overhead locations.

Any questions concerning this Interim Approval should be directed to Mr. Scott Wainwright at **scott.wainwright@fhwa.dot.gov** or by telephone at 202-366-0857.

FHWA:HOTO-1:SWainwright:ds:60857:1-28-04
cc: HOTO-1 HOTO-1(EHuckaby/Swainwright/FRanck)
Mr. Martin Knopp, Resource Center
Mr. Bob Garrett, NCUTCD
Mr. Roger Wentz, ATSSA Mr. James Barron, ATSSA
Chron 3408 Reader 3408
DF(Interim Approvals)
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Information Items:

03-13 Variable Speed Limit Sign

The item will be removed from the agenda.

"Matthew Jue" <MATTHEWJ@cityofcampbell.com >	To:" Devinder Singh" <devinder_singh@dot.ca.gov>
	cc:
05/02/2006 11:23 AM	Subject: Campbell Variable Speed Limit Sign

Devinder,

In 2003 the City of Campbell approached the California Traffic Control Devices Committee (CTCDC) to install an experimental device manufactured by 3M. The device was a variable speed limit sign to be installed on Hamilton Avenue, a six-lane major arterial with a 35-mph speed limit. The sign was to show "Speed Limit 25" during school admission and dismissal hours, and to blank out during other hours. The Committee approved the installation of the 3M sign in late September, 2003.

Our engineers had worked with our signal technicians to install the sign. The plan was to have the sign go dark in response to the California Traffic Control Devices Committee's concerns. Unfortunately, the 3M sign does not go "dark" when school is not in session, but reverts back to the normal posted speed limit of 35 mph. (It came from the manufacturer in this format).

Since we found the sign had limited capabilities, usefulness, and versatility, we decided in June 2004 not to install the sign. I thought we had forwarded our decision to the CTCDC, but in case we had not, here is the information for your use.

Matthew Jue, P.E., T.E.
Campbell Traffic Engineer